PROJECT WORK

Report on

FORMULATION AND EVALUATION OF HERBAL ANTIFUNGAL CREAM

In the Faculty Of Pharmacy,

Dr.Babasaheb Ambedkar Technological University ,Lonere

BACHELOR OF PHARMACY

Submitted by

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B.Pharm Semester-VIII

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CERTIFICATE

This is to certify that **Yekhe Sakshi Navnath** PRN.NO.**2226021823506** has carried out the required project work work prescribed by **Dr.Babasaehb Ambedkar Technological University, Lonere** for the **VIII semester** of **B.Pharm.** Course during academic year 2024-2025 & this report represents his/her work done under my supervision.

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Date: / / 20

Yekhe Sakshi Navnath

(B.PharmVIII)

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ABSTRACT :

Herbal cosmetics are the preparations used to enhance the human appearance. The aim of the present research was to formulate the herbal Cream for the purpose of Moistening, Nourishing, lightening & Treatment of various diseases of the skin. Different crude drugs: Aloe barbadensis (Aloe Vera leaves), Ocimum Sanctum (Tulsi-leaves), Azadirachta Indica (Neem- leaves), Curcuma longa (Turmeric- rhizomes), Cedro Oil(Lemon Peel), Myristica fragrans (Nutmeg seeds). Olium rosae(Rose Oil), Orange Oil, Prunus dulcis (Almond oil) were taken. Accelerated stability testing of two final sample has been. All the products were found to be stable with no sign of phase separation and no change in the color. The patch test for sensitivity testing has also been done and no evidence of skin irritation and allergic signs. This work mainly focuses on the assessment of the microbial quality of Formulated cosmetic preparations. To the surprise, both formulations was found to comply with the microbial limit tests as per the international specifications. Thus herbal cosmetics formulation is safe to use was proved and it can be used as the provision of a barrier to protect skin.[1]

Key words: cream, antifungal, nyctanthes arbortristis.

INTRODUCTION

The concept of beauty and cosmetics is as ancient as mankind and civilization. Indian herbs and its significance are popular worldwide. An herbal cosmetic have growing demand in the world market and is an invaluable gift of nature. Herbal formulations always have attracted considerable attention because of their good activity and comparatively lesser or nil side effects with synthetic drugs. Herbal cosmetics are defined as the beauty products which possess desirable physiological activity such as healing, smoothing appearance, enhancing and conditioning properties because of herbal ingredient. Now-a-days the usefulness of herbs in the cosmeceutical production has been extensively increased in personal care system and there is a great demand for the herbal cosmetics.[1]

Cosmetics are the substances intended to be applied to the human body for cleansing, beautifying, promoting attractiveness, and altering the appearance without affecting the body's structure or functions. But the usage of synthetic products becomes very harmful from long time for the youth as well as our environment. Various synthetic compounds, chemicals, dye and their derivative proved to cause various skin diseases having numerous side effects. Thus we are using herbal cosmetics as much as possible. The basic idea of skin care cosmetic lies deep in the Rig-Veda, Yajurveda, Ayurveda, Unani and Homeopathic system of medicine. These are the products in which herbs are used in crude or extract form. These herbs should have varieties of properties like antioxidant, anti-inflammatory, antiseptic, emollient, anti seborrhatic, antikerolytic activity and antibacterial etc.[1]

Cosmetics are developed to reduce wrinkles, fight acne and to control oil secretion. For various types of skin ailments formulations like skin protective, sunscreen, antiacne, antiwrinkle and antiaging are designed using varieties of materials, either natural or synthetic. Cream is a polyherbal formulation that consists of Tulsi oil. That herbs have been selected on the basis of a traditional system and scientific justification with modern uses. A herbal cream. that can give effective protection to skin and free from any toxicity or toxic residue or any irritation when regularly used and should also be cosmetically acceptable.[2]

Herbal medicine is one of the oldest and most universal system of health care system. The Advancement in the field of herbal drug delivery started recently with the aim to manage human diseases efficiently. World Health Organization (WHO) estimates that 80% of the world populations presently use herbal medicine for primary health care. Every nation is seeking health care beyond the traditional boundaries of modern medicine; turning to self medication in the form of herbal remedies. 1 Modern herbal medicine is based upon the combination of traditionalknowledge, clinical experience, understanding of medicinal science. and scientific evidence of herbal medicine. People are slowly and gradually switching to alternative forms of medicine.[3]

Advantages of herbal system of medicines

Lower risk of side effects

Widespread availability

Effectives with chronic medicine

Low cost effectiveness make them all the more alluring

Natural detoxification process of the body is effectively enhanced by herbal medicine.[4]

Disadvantages of herbal s of medicines

Bulk dosing.

Poor stability in higher acidic pH, liver metabolism etc.

Large molecular size limiting the absorption via passive diffusion.

High amount of raw material is required for processing the medicine.

Isolation and purification of individual components from whole herbal extract lead to partial or total loss of therapeutic activity.

These limitation lead to reduced bioavailability and hence, low therapeutic index of plant active constituents. Often, the natural synergy is gone which is due to chemically related constituents present in herbal extract. Hence considerable attention has been given to development of noveldrug delivery system for herbal drug.[5]

Physiology of normal skin

The skin is composed of three layers,

Epidermis (50-100 µm)

Dermis (1-2 mm)

Hypodermis (1-2 mm)

.

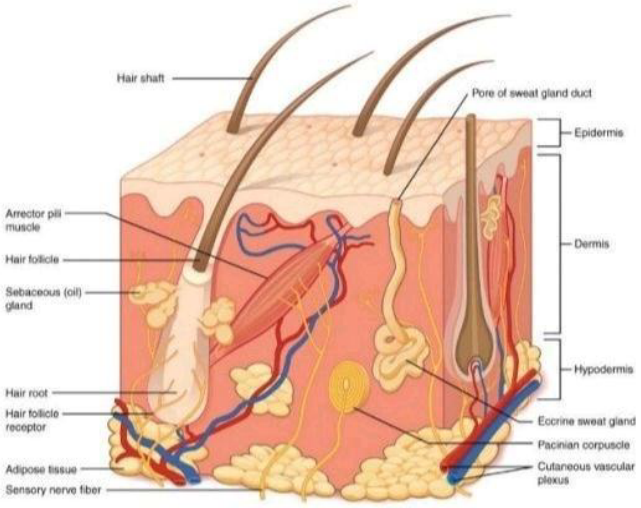


Fig no 1. The anatomical layer of the cutaneous tissue.

The barrier to percutaneous absorption lies within the stratum corneum, the most superficial layer of the epidermis. The function of the stratum corneum is to reduce water loss, provide protection against abrasive action and microorganisms, and generally act as a permeability barrier to the environment.

The stratum corneum is a 10-20 µm thick, multi layer stratum of flat, polyhedral-shaped, 2to3 µm thick, non-nucleated cells named corneocytes. Corneocytes are composed primarily ofinsoluble bundled keratins surrounded by a cell envelope stabilized by cross-linked proteinsand covalently bound lipids. Corneodesmosomes are membrane junctions interconnecting corneocytes and contributing to stratum corneum cohesion. The intercellular space between corneocytes is composed of lipids primarily generated from the exocytosis of lamellar bodiesduring the terminal differentiation of the keratinocytes. These lipids are required for a competent skin barrier function.[8]

The epidermis is composed of 10-20 layers of cells. This pluristratified epithelium also contains melanocytes involved in skin pigmentation, and Langerhans' cells, involved in antigen presentation and immune responses. The epidermis, as for any

epithelium, obtains its nutrients from the dermal vascular network The epidermis is a dynamic structure and the renewal of the stratum corneum is controlled by complex regulatory systems of cellular differentiation. Current knowledge of the function of the stratum corneum has come from studies of the epidermal responses to perturbation of the skin barrier such as:

(i) Extraction of skin lipids with apolar solvents

(ii Physical stripping of the stratum corneum using adhesive tape

(iii) Chemically-induced irritation.

Fungi

"Fungi are a kingdom of usually multicellular eukaryotic organism that are heterotrops and have important role in nutrient cycling in an ecosystem".

Characteristics of fungi

Some fungi are single-celled, while others are multicellular, single-celled fungi are called yeast. some fungi alternate between single celled yeast and multicellular forms depending on what stage of the life cycle they are in. Fungi cells have a nucleus and organelles, like plant and animal cells do. The cell walls of fungi contain chitin, which is hard substance also found in the exoskeletons of insects and arthropods such as crustaceans.

Types of Fungi

Chytridiomycota

Zygomycota

Glomeromycota

Ascomycota.

➤ **Chytridiomycota:** Chytrids, the organisms found in Chytridiomycota, are usually asexual, and produce spores that no around using flagella, small tail like appendages. It can cause fungal infection in frogs by burrowing under their skin.

➤ **Zygomycota**: These are mainly terrestrial. They cause problem by growing on human few soures.Ex:Rhizopus stolonifer a bread mold.

➤ **Glomeromycota**: They are found in soil. The fungi obtain sugar from plant and in return, dissolves, minerals in the soil to provide the plant with nutrients. This fungi also reproduce asexually.

Ascomycota: These are the pathogens of plant and animals, including humans in which they are responsible for infection like Athelete's Foot, Ringworm, and ergotism, which causes vomiting, convulsions, hallucination.and sometimes even death.

Fungal Infection:

Definition: an inflammatory condition caused by a fungus, mycosis, zymosis (medicine) the development and spread of an infectious disease (especially one caused by a fungus). blastomycosis any of several infections of the skin or mucous membrane caused by

Blastomycosis.

Fungal infections are common throught much of natural world. In humans, fungal infection occur when an invading fungas takes over an area of the body and is too much for the immune system to handle. Fungi can live in the air, soil, water and plants. There are also some fungi that live naturally in the human body.[4]

Type of fungal infection

1. Superficial: Affect skin mucous membrane. e.g. tinea versicolor dermatophytes: Fungi that affect keratin layer of skin, hair, nail. e.g. tinea pedis, ring worm infection

Candidiasis: Yeast-like, oral thrush, vulvo-vaginitis, nail infections.

2. Deep infections: Affect internal organs as: lung, heart, brain leading to pneumonia, endocarditis, meningitis.

Literature Review

1. A. Premkumar. T. Muthukumaran.et.al. 2014

This research paper consist of: A novel cream formulation consisting of combination of miconazole nitrate. mupirocil and hydrocortisone was prepared. The formulation was subjected to in vitro diffusion studies. Microbiological studies and in vivo skin irritation studies were performed to find out the safety of material used in the formulation. The developed cream consisting of combination of miconazole nitrate, mupirocil, and hydrocortisone was found to be safe and effective for the treatment of skin infection.

2. Amulyaratna behera.et.al.2012.

This research paper consist of: GB-loded PLGA NPs were prepared by solvent evaporation technique using methanol /dichloromethane & characterize by transmission electron microscopy (TEM), and differential scanning calorimetry (DSC). effect of stirring speed(250.1000, 1500, 2500 rpm) and drug polymer (1:1,1:2.1:3 and 2:1) on particle size, size distribution, zeta potential, drug loading, encapsulation efficiency and drug release was also studied. Stable NPS were successfully prepared without any incompatibility, as indicated by TEM and DSC studies, respectively. As polymer and drug concentrations and stirring speed increased. particle size, drug loading and encapsulation efficiency also increased. Increase in polymer concentration sustained drug release but reverse was obtained as drug concentration increased.

3. Ashwini. S. Dhase.et.al. 2014.

This research paper consist of: The purpose of the present research work was to formulate and evaluate vanishing herbal cream.The majority of existing creams which has prepared from drug of synthetic origin, such as acyclovir, triamcinolone, calcipotriene, mometasone. extracts gives fairness to face, but it has several side effects such as itching or several allergic reactions. Herbal cream do not have any of these side effects. without side effects it gives the fairness look to skin.

Overview of Fungal Skin Inf ections

Fungi usually make their homes in moist areas of the body where skin surfaces meet: between the toes, in the genital area, and under the breasts. Common fungal skin infections are caused by yeasts (such as Candida or Malassezia furfur) or dermatophytes, such as Epidermophyton, Microsporum, and Trichophyton. Many such fungi live only in the topmost layer of the epidermis (stratum corneum) and do not penetrate deeper. Obese people are more likely to get these infections because they have excessive skinfolds, especially if the skin withina skinfold becomes irritated and broken down (intertrigo). People with diabetes tend to be more susceptible to fungal infections as well. Strangely, fungal infections on one part of the body can cause rashes on other parts of the body that are not infected. For example, a fungal infection on the foot may cause an itchy, bumpy rash on the fingers.These eruptions (dermatophytids, or identity or id reactions) are allergic reactions to the fungus. They do not result from touching the infected area.

Fig. 2: Fungal skin infection

Symptoms

➤ Skin changes, including red and possibly cracking or peeling skin.

Itching.

Causes of fungal skin infection: Imbalance of bacteria is due to following reasons:

Due to use of antibiotics

➤ Hormone imbalance

Poor eating habbits

Diagnosis

Doctors may suspect a fungal infection when they see a red, irritated, or scaly rash in one of the commonly affected areas. They can usually confirm the diagnosis of a fungal skin infection by scraping off a small amount of skin and having it examined under a microscope or placed in a culture medium where the specific fungus can grow and be identified .

Treatment

Antifungal drug

Measures to prevent moisture

Fungal infections are typically treated with antifungal drugs, usually with antifungal drugs that are applied directly to the affected area (called topical drugs). Topical drugs may include creams, gels, lotions, solutions, or shampoos. Antifungal drugs may also be taken by mouth.

In addition to drugs, people may use measures to keep the affected areas dry, such as applying powders or wearing open-toed shoes.

For some infections, doctors give corticosteroids to relieve inflammation and itching.

Cream

Definition- "Cream is semisolid preparation of a medication for topical use (on the skin) that contains a water base. Essentially, it is a preapation of oil (often lanolin or petrolatum) in water. "An ointment is preparation for topical use"

Antifungal cream: "Cream which is used for destroying fungi or inhibiting their growth"

Advantages of Cream

➤able to calm inflammation

➤ Promote skin tone

➤ Keep wrinkles and acne away

➤Increase cell metabolism and blood circulation

➤ Easily water washable. Easy to wipe away

➤ Less greasy compared to ointment.

➤ Easy to spread on the skin's surface (i.e. easy to apply).

Suitable for sensitive, dry, and fair skin.

➤ Suitable for acute lesions

Disadvantages of Cream

Stability is not as good as ointment

➤ They are less hygroscopic than other semi-solid preparation, so risk of contamination is high than other.

➤ Less viscous than other semi-solid preparation.

4. Santana Mari.et.al.2022.

Histochemical and pharmacological studies on Nyctanthes arbortristis L The present investigation on the various parts of Nyctanthes arbortristis L. has been undertaken mainly to understand the anatomy, tissue components, phytochemicals and antimicrobial activity. It has been achieved by adopting the basic techniques in anatomy and histochemistry. The main focus of this study was on the internal structure of stem. leaf and flower so as to understand the role of specialized cells (secretary cells) and pigments (carotenoids).

5. A Bhosale.et.al. October 2009

Nyctanthes arbortristis Linn. Is one of the wellknow medicinal plant. It is a common wild hardy large shrub or small tree. It is a native of India.distributed wild in sub-Himalayan regions and southwards to Godavari. Different parts of this plant are used in Indian systems of medicine for various pharmacological actions. The rural people of Orissa use Nyctanthes arbortristis L. to cure various ailments.

6. Divya Paikaraet.al.2015

Nyctanthes arbor-tristis is commonly known as Night- flowering Jasmine, Coral Jasmine and Parijat. The present studies attempts phytochemical activity of leaves extract of Nyctanthes arbortristis. The crude powder extracts of the leaves of the above plants were taken for the study. Screening of phytochemical of Nyctanthes arbortristis for the presence of tannins, flavonoids, terpenoids, saponins, steroids, carbohydrates, Cardiac glycosides, alkaloids, proteins, using standard methods.

7. B. Gulshan.et,al 2015

Ayurveda is one of the oldest systems of medicine that uses plants and their extracts for treatment and management of various diseased states. Nyctanthes arbortristis Linn. (Oleaceae) is an important large shrub of tropical and subtropical regions of the world that has been traditionally used to provoke menstruation, for treatment of scabies and other skin infections. as hair tonic, chalogogue, and laxative, diaphoretic, diuretic, in treatment of arthritis. malaria, bronchitis and as anthelmintic.

AIM AND OBJECTIVE

Aim Formultion and evaluation of herbal anti fungal cream

Objective

The purpose of the present investigation is to formulate Herbal Antifungal Cream against the fungal infection of skin.

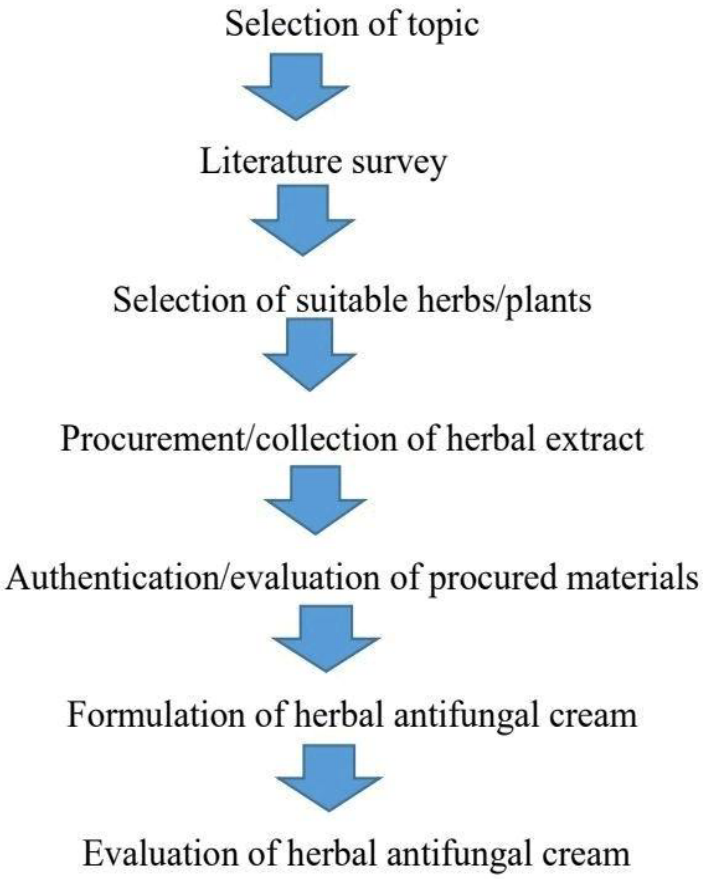
The objective of proposed research work is to formulate and evaluate the anti-fungal cream using herbal extracts.

To evaluate the formulated cream for the parameter like physical appearance, pH and spread ability etc.

The objective of this research work was to formulate the cream which does not cause side effects or adverse reaction.

To study efficacy and safety of prepared antifungal.[1]

PLAN OF WORK :


Selection of topic
Literature survey
Selection of suitable herbs/plants
Procurement/collection of herbal extract
Authentication/evaluation of procured materials
Formulation of herbal antifungal cream
Evaluation of herbal antifungal cream

Material and method

Plant profile:

Fig no.3 Nyctanthes Arbortristis

Nyctanthes arbor-tristis linn. Is a memmber of oleaceae (nyctaginaceae) family.the plant is commomly kwon as “night jasmine” or Harsingar. The name Nyctanthes originated from Greek Words “nykhta” which means night and “anthos” means flower.

Classification: this taxonomic classification is according to the APG-IV (Angiosperm phylogeny group IV system) 2016

Kingdom: Plantae

Class: Eudicots

Division: Angiosperm

Order: Lamiales

Family: Oleaceae

Genus: Nyctanthes

Species: Arbortristis .[2]

Role of ingredient :

Sr. no	Ingredient	uses
1	Nycthanhes arbortristis leaves	Antifungal agents
2	Petroleum Jelly	Soothing agent
3	Hard paraffin	Lubricant
4	Cetyl alcohol	Emollient
5	Glyceryl monosterate	Emulsifier
6	Methyl paraben	Preservatives
7	Propyl parabean	preservatives
8	Rose water	Fragrance

Table no. 1 role of Ingredient

Chemicals- Petrolium jelly, Hard Paraffin, Cetyl alcohol. Glyceryl monostearate, Methyl paraben and Propyl Paraben

Collection- Nyctanthes leaves were collected from the plant present in Nature.

Extraction of Nyctanthes leaves: -

In this process coarsely powdered drug are placed in a stoppered container with the whole of the solvent and allowed to stand for a period of at least 3 days (3 - 7 days) with frequent agitation, until soluble matter is dissolved.

The mixture is then strained through filter paper, the marc pressed and the combined liquids clarified (cleaned by filtration) or by decantation, after standing.

Fig no4 : Extraction

Formulation of herbal anti-fungal cream.

Procedure

Formulation can be prepared by adding two different phases which are as follows.

Phase 1: Petrolium jelly, hard paraffin, Cetyl alcohol, glyceryl monostearate were melt in beaker. Allow to melt. The temperature of oil phase maintains between 70˚C-80˚C.

Phase 2: Extract and water-soluble components such as methyl paraben, propyl paraben was dissolved in ˚beaker. The temperature of aqueous phase maintains between 70˚C-80˚C. After heating the aqueous phase was added in the oil phase with constant stirring until the cream is formed. Perfume was added when the temperature dropped to 45˚C - 50˚C. [3]

Method :

FORMULA :

INGREDIENTS	QUANTITY
Nyctanthes extract	6 ml
Petroleum jelly	12.9 gm
Cetyl alcohol	6 gm
Gylcerol monosreate	1.5 gm
Hard paraffin	1.5 gm
Methyl paraben	1.2 gm
Propyl paraben	0.9 gm
Rose water	q.s.
Tulsi oil	q.s.

Table no.2 formula

EVALUATION PARAMETR :

1) Physical appearance:

The physical appearance of the cream can be observed by its color, roughness and graded.

2) Determination of pH:

The pH of the cream can be measured on a standard digital pH meter at room temperature by taking adequate amount of the formulation diluted with a suitable solvent in a suitable beaker.

3) Spreadability:

Adequate amount of sample is taken between two glass slides and a weight of 100 gm. is applied on the slides for 5 minutes. Spreadability can be expressed as,

$S = m*/t$

Where, m = Weight applied to upper slide. l = Length moved on the glass slide.

t = Time taken

4) Washability:

This test was performed directly on skin, preparation applied on skin and wash with normal water, after washing clean and clear skin is observed

5) Irritancy test:

Mark an area of 1 sq. cm on the left-hand dorsal surface. The cream was applied to the specified area and time was noted. Irritancy, erythema, edema was checked, if any, for regular interval up to 24 hrs.

6) Homogeneity:

The formulation was tested for the homogeneity by visual appearance and by touch.

7) Test for microbial growth in formulated cream

The formulated creams were inoculated on plates of agar media by streak plate method and a control was prepared by omitting the cream. The plates were placed in to the incubator and are incubated at 37 OC for 24 hours. After the incubation period. plates were taken out and check the microbial growth by comparing it with the control.[1]

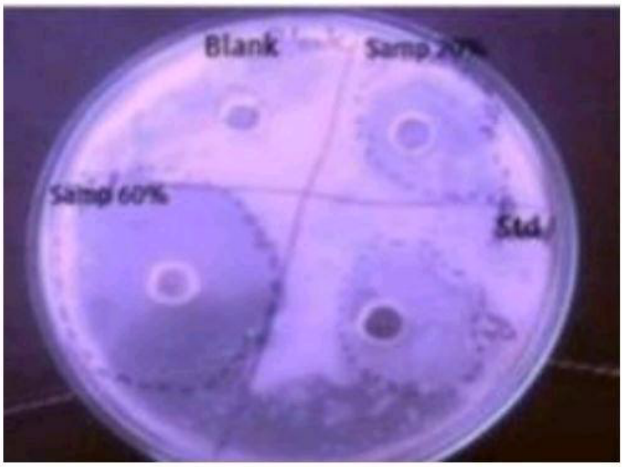


FIG no.5 : Microbial Test

Result :

The results of evaluation are shown in table no 3. Prepared formulation was pale brown in color. It has Pleasant odor and smooth texture

Physical Properties:

The physical properties of formulated cream were observed by color. Odour and texture.

Sr.no.	Parameter	Evaluation
1	Colour	Ivory
2	Odour	pleasant
3	Texture	smooth

Table no3.physical properties

2. Determination of pH

The pH of the cream was found to be in range of 5.6 to 6. 8 which is good for the skin pH. The Herbal formulation was shown pH nearer to skin required i. e.. pH 6.7

3. Spreadability Test:

The Spreadability test showed that the formulated cream has good spreadable property.

4. Washability:

The cream applied on the skin was easily removed by washing with tap water.

5. Irritancy Test:

The formulated cream shows no redness, edema, irritation and inflammation during studies.

The formulated cream is safe to use.

6 .Homogenecity:

The homogeneity of the formulated cream was observed by visual appearance and touch. The appearance and tou ch of the cream were good

Sr.no	parameter	Evaluation
1	pH	6.5
2	Spreadiblity	Easily spreadable
3	Washability	Easily washable
4	Irritancy test	No irriation
5	Homogenecity	Good

TABLE NO4: Evaluation Parameter of herbal antifungal cream

FIG NO 6.: preparation of Antifungal Cream

Conclusion:

The present work focuses on the potential of herbal extracts from cosmetic purposes. They have less products were made from using herbal extract. The plants having own characteristics about effective use as medicinal/ cosmetic purposes. The aim of these project is to formulate anti- fungal cream from herbal extract. The prepared formulation showing good Spreadability and good consistency during the study period. Some of the other parameters are visual appearance. irritancy test shows good.

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